

**Appendix A**  
**Purpose and Need Statement**  
**Draft Environmental Assessment as of September 1, 2009**  
**Fern Valley Interchange**

**1.4 PURPOSE AND NEED STATEMENT**

The following purpose and need statement was developed for the proposed Fern Valley Interchange project. Any build alternative analyzed in this environmental assessment (EA) must meet the project's purpose and need.

**1.4.1 Purpose of the Proposed Action**

The purpose of the proposed action is to reduce congestion and improve operational conditions at the I-5 interchange with Fern Valley Road, on Fern Valley Road within the City of Phoenix<sup>1</sup> Urban Growth Boundary, and on OR 99 near its intersection with Fern Valley Road. In addition, the Bear Creek Bridge is narrow and in poor condition and therefore is proposed for replacement.

**1.4.2 Need for the Proposed Action**

The locations of the key areas of congestion and safety considered for this project are provided in Figure 1-4. The Fern Valley Interchange is experiencing increasing congestion due to continued growth in Phoenix and southeast Medford and increased through traffic on I-5. Increased use of the interchange by local residents, commuters, heavy trucks and regional traffic is causing vehicles to queue on the off-ramps during times of heavy peak hour<sup>2</sup> volumes. The capacity of the interchange is degrading rapidly, and traffic safety remains an ongoing concern. By 2010, the northbound ramp terminal intersection will exceed mobility standards; vehicles are predicted to queue back on the ramps to I-5 during times of heavy peak hour volumes. (Mobility standards, which measure how well a road functions, are discussed in Chapter 3, Section 3.1.1, Traffic Analysis.) Long overlapping queues, originating from the OR 99/Fern Valley Road intersection, will create nearly continuous queuing along the Fern Valley Road corridor. Some turn bays at the ramp terminals would be blocked for substantial portions of the peak traffic hour. Substantial queues would exist at the Fern Valley Road/N. Phoenix Road intersection. Congestion on OR 99 will result from stopped and slow-moving queues. The affected area will stretch from approximately 175 feet north of Cheryl Lane to approximately 100 feet south of Bolz Road.

By 2030, the following traffic conditions are predicted:

- With the increase in traffic volumes, congestion will increase throughout the project area. All of the issues that existed in 2010 will still be present in 2030 and

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<sup>1</sup> "City of Phoenix" and "City" are used interchangeably in this document.

<sup>2</sup> A rush hour or peak hour is a part of the day during which traffic congestion on roads and crowding on public transport is worst. Normally, this happens twice a day, while people are commuting.

- will have gotten worse. The traffic queues on the off-ramps that extend back onto I-5 will do so for a longer period of time each day, increasing the safety concerns.
- Seven of the 16 intersections within the project area are predicted to exceed v/c<sup>3</sup> standards,<sup>4</sup> and many would be over-capacity (v/c ratio greater than 1.0). The Fern Valley Road intersection with OR 99, the two ramp terminal intersections, and the southbound OR 99/1<sup>st</sup> Street intersection would all exceed v/c standards. The Fern Valley Road and N. Phoenix Road intersection would be just below the maximum v/c standard in 2030, but would start having major problems after 2030.
  - Fern Valley Road would be completely congested, and queuing would spill onto the connecting roadways.
  - The congestion on Fern Valley Road would cause northbound queues on OR 99 to extend south beyond 1<sup>st</sup> Street.

The Fern Valley Interchange does not meet current interchange design standards. The approaches to the Fern Valley Road overcrossing are steep and limit the visibility of interchange traffic. In addition, the length of the I-5 ramp tapers and acceleration lanes are substandard (425 feet vs. the ODOT standard of 580 feet), which results in short stopping and acceleration distances.

Fern Valley Road has substandard shoulders (4-foot shoulders on the overcrossing and 6-foot shoulders on the approaches vs. the ODOT standard of 8 feet) and does not have dedicated bicycle lanes. Sidewalks are discontinuous along Fern Valley Road, creating safety concerns for pedestrians. This poses particular problems on the I-5 overcrossing and from Bear Creek Bridge to OR 99, where there are no sidewalks, but where pedestrians need to be accommodated.

Fern Valley Road crosses Bear Creek between the I-5 interchange and OR 99. This narrow (36-foot-wide), 2-lane bridge creates a bottleneck on Fern Valley Road. In addition, the bridge was built in 1951 and is now structurally deficient and functionally obsolete. Bridge inspection (in July 2007) resulted in a bridge sufficiency rating of 6 out of 100, with 100 being the best rating possible. Due to cracks and spalling (corrosion of the reinforcing steel, which can cause concrete to fall off), the bridge is now limited to loads less than 80,000 pounds. Even if the interchange were to be completely rebuilt, the two-lane bridge would still cause long queues to occur on Fern Valley Road, eventually impacting the ramp terminals and the function of the interchange.

The OR 99/Fern Valley Road intersection is substandard—the western leg of the intersection is a retail business parking lot rather than another roadway. There are numerous driveways close to the intersection creating safety issues. In addition, OR 99 has no dedicated bike lanes or shoulders; it has 14-foot outside lanes where bikes share

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<sup>3</sup> The volume-to-capacity (v/c) ratio is the ratio between the volume (v) of vehicles that use a facility, such as a roadway or controlled intersection, and the capacity (c) of the facility.

<sup>4</sup> The *1999 Oregon Highway Plan* (OHP) mobility standards are used when evaluating maximum acceptable volume-to-capacity (v/c) ratios for existing and future No-Build conditions.

the roadway. The center-turn median is 14 feet vs. the ODOT standard of 16 feet. There are no sidewalks on OR 99 north of Fern Valley Road except intermittently on business frontages.

In summary, the proposed project is intended to address traffic congestion issues, meet mobility standards over the 20-year project timeframe, correct safety concerns associated with the I-5 overcrossing and the Bear Creek Bridge, and provide adequate bicycle and pedestrian facilities. In addition, the proposed project needs to address specific roadway conditions where crash history (described below) indicates specific safety concerns.

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